**MATHEMATICS: KINDERGARTEN**

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | K | Number Sense | 1 | Divide sets of ten or fewer objects into equal groups |
| Mathematics | K | Number Sense | 2 | Record and organize information using objects and pictures |
| Mathematics | K | Number Sense | 3 | Count objects in a set and use objects, pictures, and numerals to represent whole numbers up to 20 |
| Mathematics | K | Number Sense | 4 | Find the number that is one more than or one less than any whole number up to 20 |
| Mathematics | K | Number Sense | 5 | Use correctly the words one and many; none, some and all; more and less; most and least; and equal to, more than and less than |
| Mathematics | K | Number Sense | 6 | Develop initial understandings of place value and the base 10 number system by showing equivalent forms of whole numbers from 10 to 20 as groups of tens and ones using objects, diagrams and numerals |
| Mathematics | K | Number Sense | 7 | Count to 100 by ones and by tens and count on by one from any given number. |
| Mathematics | K | Number Sense | 8 | Write numbers from 0 to 20 and recognize number words from 0 to 10. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects) |
| Mathematics | | Number Sense | 9 | When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object |
| Mathematics | K | Number Sense | 10 | Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted |
| Mathematics | K | Number Sense | 11 | Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects |
| Mathematics | K | Number Sense | 12 | Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies |
| Mathematics | K | Number Sense | 13 | Compare two numbers between 1 and 20 presented as written numerals |
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| Mathematics | K | Computations-Operation | 1 | Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem |
| Mathematics | K | Computations-Operation | 2 | Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1) |
| Mathematics | K | Computations-Operation | 3 | For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation |
| Mathematics | K | Computations-Operation | 4 | Compose and decompose numbers from 11 to 19 into ten ones. by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones |
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| Mathematics | K | Algebra | 1 | Create, extend and give the rule for simple patterns with numbers and shapes |
| Mathematics | K | Algebra | 2 | Sort, classify, and order objects by size, number, and other properties |
| Mathematics | K | Algebra | 3 | Model situations that involve the addition and subtraction of whole numbers, using objects, pictures, and symbols |
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| Mathematics | K | Geometry | 1 | Identify, describe, sort, compare and classify objects and geometric shapes (circle, triangle, square, rectangle, and cube) by shape, size, number of vertices and other attributes |
| Mathematics | K | Geometry | 2 | Identify the positions of objects and geometric shapes in space and use the terms inside, outside, between, above, below, near, far, under, over, up, down, behind, in front of, next to, to the left of and to the right of |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
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| Mathematics | K | Geometry | 3 | Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length) |
| Mathematics | K | Geometry | 4 | Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes |
| Mathematics | K | Geometry | 5 | Compose simple shapes to form larger shapes |
| Mathematics | K | Geometry | 6 | Analyze basic characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships |
| Mathematics | K | Geometry | 7 | Divide shapes into equal parts |
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| Mathematics | K | Measurement | 1 | Make direct comparisons of the length, capacity, weight, and temperature of objects and recognize which object is shorter, longer, taller, lighter, heavier, warmer, cooler, or holds more |
| Mathematics | K | Measurement | 2 | Understand concepts of time: morning, afternoon, evening, today, yesterday, tomorrow, week, month, and year. Understand that clocks and calendars are tools that measure time |
| Mathematics | K | Measurement | 3 | Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object |
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| Mathematics | K | Data Analysis and Probability | 1 | Identify, sort, and classify objects by size, number, and other attributes. Identify objects that do not belong to a particular group |
| Mathematics | K | Data Analysis and Probability | 2 | Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them using objects, pictures and graphs |
| Mathematics | K | Data Analysis and Probability | 3 | Record and organize information using objects and pictures |

**MATHEMATICS: FIRST GRADE**

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
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| Mathematics | 1 | Number Sense | 1 | Match the ordinal numbers first, second, third, etc., with an ordered set up to 10 items |
| Mathematics | 1 | Number Sense | 2 | Count to 120 by ones, fives and tens, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral |
| Mathematics | 1 | Number Sense | 3 | Show equivalent forms of whole numbers as groups of tens and ones and understand that the two digits of a two-digit number represent amounts of tens and ones. |
| Mathematics | 1 | Number Sense | 4 | Understand that 10 can be thought of as a bundle of ten ones — called a "ten. |
| Mathematics | 1 | Number Sense | 5 | Understand that the numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones |
| Mathematics | 1 | Number Sense | 6 | Understand that the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones) |
| Mathematics | 1 | Number Sense | 7 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and < |
| Mathematics | 1 | Number Sense | 8 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used |
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| Mathematics | 1 | Computations-Operation | 1 | Understand the role of zero in addition and subtraction |
| Mathematics | 1 | Computations-Operation | 2 | Demonstrate fluency with addition facts and the corresponding subtraction facts for totals up to at least 20 |
| Mathematics | 1 | Computations-Operation | 3 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem |
| Mathematics | 1 | Computations-Operation | 4 | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem |
| Mathematics | 1 | Computations-Operation | 5 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13) |
| Mathematics | 1 | Computations-Operation | 6 | Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2 |
| Mathematics | 1 | Computations-Operation | 7 | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten |
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| Mathematics | 1 | Algebra | 1 | Write and solve equations from problem situations involving addition and subtraction |
| Mathematics | 1 | Algebra | 2 | Create word problems that match given equations involving addition and subtraction |
| Mathematics | 1 | Algebra | 3 | Recognize and use the relationship between addition and subtraction (inverse relationship) |
| Mathematics | 1 | Algebra | 4 | Create, extend and give a rule for number patterns using addition |
| Mathematics | 1 | Algebra | 5 | Solve problems using the identity principle for addition and subtraction |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
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| Mathematics | 1 | Algebra | 6 | Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used |
| Mathematics | 1 | Algebra | 7 | Model situations that involve the addition and subtraction of whole numbers, using objects, pictures, and symbols |
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| Mathematics | 1 | Geometry | 1 | Classify and sort familiar plane and solid objects by position, shape, size, roundness, and other attributes. Explain the rule used |
| Mathematics | 1 | Geometry | 2 | Identify objects as two-dimensional or three-dimensional. Identify two-dimensional shapes as the faces of three-dimenstional objects. |
| Mathematics | 1 | Geometry | 3 | Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes |
| Mathematics | 1 | Geometry | 4 | Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape |
| Mathematics | 1 | Geometry | 5 | Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares |
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| Mathematics | 1 | Measurement | 1 | Use different units to measure the length of the same object and predict whether the measure will be greater or smaller when a different unit is used |
| Mathematics | 1 | Measurement | 2 | Compare and order objects according to length, area, capacity, weight, and temperature, using direct comparison or a nonstandard unit |
| Mathematics | 1 | Measurement | 3 | Tell and write time to the nearest half-hour and relate time to events (before/after, shorter/longer) using analog and digital clocks |
| Mathematics | 1 | Measurement | 4 | Identify and give the values of collections of pennies, nickels, and dimes |
| Mathematics | 1 | Measurement | 5 | Measure the length of an object with multiple copies of units of the same size, such as paper clips laid end to end |
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| Mathematics | 1 | Data Analysis and Probability | 1 | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another |
| Mathematics | 1 | Data Analysis and Probability | 2 | Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them |
| Mathematics | 1 | Data Analysis and Probability | 3 | Discuss events related to students' experiences as likely or unlikely |

**MATHEMATICS: SECOND GRADE**

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 2 | Number Sense | 1 | Using a number line, be able to count, read, write, compare a whole numbers up to at least 1,000 |
| Mathematics | 2 | Number Sense | 2 | Count by ones, twos, fives, tens and hundreds to at least 1,000. Show the number that is 10 more or 10 less than any number from 10 through 90 |
| Mathematics | 2 | Number Sense | 3 | Match the ordinal numbers first, second, third, etc. with an ordered set up to 30 items |
| Mathematics | 2 | Number Sense | 4 | Use words, models, standard form and expanded form to represent place value and to show equivalent forms of whole numbers up to at least 1,000 as groups of hundreds, tens and ones |
| Mathematics | 2 | Number Sense | 5 | Identify numbers as even or odd by placing that number of objects in two groups of the same size and recognizing that for even numbers no object will be left over and for odd numbers one object will be left over |
| Mathematics | 2 | Number Sense | 6 | Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. |
| Mathematics | 2 | Number Sense | 7 | Understand that 100 can be thought of as a bundle of ten tens — called a “hundred. |
| Mathematics | 2 | Number Sense | 8 | Understand that the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones |
| Mathematics | 2 | Number Sense | 9 | Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons |
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| Mathematics | 2 | Computations-Operation | 1 | Use estimation to decide whether answers are reasonable in addition problems |
| Mathematics | 2 | Computations-Operation | 2 | Use mental arithmetic to add or subtract 0, 1, 2, 3, 4, 5, or 10 with numbers less than 100 |
| Mathematics | 2 | Computations-Operation | 3 | Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem |
| Mathematics | 2 | Computations-Operation | 4 | Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends |
| Mathematics | 2 | Computations-Operation | 5 | Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends |
| Mathematics | 2 | Computations-Operation | 6 | Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction |
| Mathematics | 2 | Computations-Operation | 7 | Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds |
| Mathematics | 2 | Computations-Operation | 8 | Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900 |
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| Mathematics | 2 | Algebra | 1 | Relate problem situations to equations involving addition and subtraction |
| Mathematics | 2 | Algebra | 2 | Write equations to solve single and multi-step addition and subtraction word problems |
| Mathematics | 2 | Algebra | 3 | Create, extend and give a rule for number patterns using addition and subtraction |
| Mathematics | 2 | Algebra | 4 | Show that the order in which two numbers are added (commutative property) and how the numbers are grouped in addition (associative property) will not change the sum. These properties can be used together to show that numbers can be added in any order |
| Mathematics | 2 | Algebra | 5 | Model situations that involve the addition and subtraction of whole numbers, using objects, pictures, and symbols |
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| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 2 | Geometry | 1 | Construct squares, rectangles, triangles, cubes, and rectangular prisms with appropriate materials |
| Mathematics | 2 | Geometry | 2 | Identify, describe, classify, and draw plane and solid geometric shapes (triangle, square, rectangle, cube, rectangular prism) according to the number and shape of faces and the number of sides, edges, and/or vertices |
| Mathematics | 2 | Geometry | 3 | Investigate and predict the result of putting together and taking apart two-dimensional and three-dimensional shapes |
| Mathematics | 2 | Geometry | 4 | Identify congruent (equal) two-dimensional shapes in any position |
| Mathematics | 2 | Geometry | 5 | Partition a rectangle into rows and columns of same-size squares and count to find the total number of them |
| Mathematics | 2 | Geometry | 6 | Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape |
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| Mathematics | 2 | Measurement | 1 | Describe the relationship among inch, foot, and yard. Describe the relationship between centimeter and meter |
| Mathematics | 2 | Measurement | 2 | Estimate and measure capacity using cups and pints |
| Mathematics | 2 | Measurement | 3 | Describe relationships of time: seconds in a minute; minutes in an hour; hours in a day; days in a week; and days, weeks, and months in a year |
| Mathematics | 2 | Measurement | 4 | Find the duration of intervals of time in hours |
| Mathematics | 2 | Measurement | 5 | Find the value of a collection of pennies, nickels, dimes, quarters and dollars |
| Mathematics | 2 | Measurement | 6 | Estimate and measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes to the nearest inch, foot, yard, centimeter and meter. |
| Mathematics | 2 | Measurement | 7 | Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen |
| Mathematics | 2 | Measurement | 8 | Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. |
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| Mathematics | 2 | Data Analysis and Probability | 1 | Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem |
| Mathematics | 2 | Data Analysis and Probability | 2 | Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram |
| Mathematics | 2 | Data Analysis and Probability | 3 | Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph |
| Mathematics | 2 | Data Analysis and Probability | 4 | Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them |
| Mathematics | 2 | Data Analysis and Probability | 5 | Develop and evaluate inferences and predictions that are based on data |

**MATHEMATICS: THIRD GRADE**

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 3 | Number Sense | 1 | Given a set of objects or a picture, name and write a decimal to represent tenths and hundredths |
| Mathematics | 3 | Number Sense | 2 | Count, read, write, compare and plot on a number line whole numbers up to at least 10,000 |
| Mathematics | 3 | Number Sense | 3 | Interpret and model fractions as parts of a whole, parts of a group, and points and distances on a number line for numbers less than, equal to or greater than one |
| Mathematics | 3 | Number Sense | 4 | Compare and order fractions by using models, benchmark fractions, or common numerators and denominators |
| Mathematics | 3 | Number Sense | 5 | Use words, models, standard form and expanded form to represent place value and to show equivalent forms of whole numbers up to at least 10,000 |
| Mathematics | 3 | Number Sense | 6 | Use place value understanding to round whole numbers to the nearest 10 or 100 |
| Mathematics | 3 | Number Sense | 7 | Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model |
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| Mathematics | 3 | Computations-Operation | 1 | Solve problems involving addition and subtraction of whole numbers fluently within a 1000 using a standard algorithmic approach with understanding |
| Mathematics | 3 | Computations-Operation | 2 | Represent the concept of multiplication of whole numbers with the following models: repeated addition, equal-sized groups, arrays, area models and equal "jumps" on a number line. Explain the result of multiplying by zero |
| Mathematics | 3 | Computations-Operation | 3 | Represent the concept of division of whole numbers with models as successive subtraction, partitioning, sharing and an inverse of multiplication. Show that division by zero is not possible |
| Mathematics | 3 | Computations-Operation | 4 | Construct and analyze frequency tables and bar graphs from data, including data collected through observations, surveys and experiments |
| Mathematics | 3 | Computations-Operation | 5 | Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each |
| Mathematics | 3 | Computations-Operation | 6 | Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each |
| Mathematics | 3 | Computations-Operation | 7 | Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem |
| Mathematics | 3 | Computations-Operation | 8 | Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers |
| Mathematics | 3 | Computations-Operation | 9 | Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding |
| Mathematics | 3 | Computations-Operation | 10 | Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations |
| Mathematics | 3 | Computations-Operation | 11 | Understand a fraction 1/b as the quantity formed by 1 part when awhole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b |
| Mathematics | 3 | Computations-Operation | 12 | Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 3 | Computations-Operation | 13 | Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line |
| Mathematics | 3 | Computations-Operation | 14 | Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line |
| Mathematics | 3 | Computations-Operation | 15 | Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model |
| Mathematics | 3 | Computations-Operation | 16 | Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers |
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| Mathematics | 3 | Algebra | 1 | Represent relationships of quantities in the form of a numeric expression or equation including the use of variables when appropriate |
| Mathematics | 3 | Algebra | 2 | Solve problems using numeric equations |
| Mathematics | 3 | Algebra | 3 | Solve simple problems involving a functional relationship between two quantities using words and tables |
| Mathematics | 3 | Algebra | 4 | Create, extend and give a rule for geometic patterns and for number patterns by using multiplication |
| Mathematics | 3 | Algebra | 5 | Determine the unknown whole number in a multiplication or division equation relating three whole numbers |
| Mathematics | 3 | Algebra | 6 | Apply properties of operations as strategies to multiply and divide such as commutative, associative, distributive, and identity properties |
| Mathematics | 3 | Algebra | 7 | Understand division as an unknown-factor problem using the inverse relationship between multiplication and division |
| Mathematics | 3 | Algebra | 8 | Model problem situations with objects and use representations such as words, tables, and equations to draw conclusions |
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| Mathematics | 3 | Geometry | 1 | Identify, describe, and classify: cube, sphere, prism, pyramid, cone, and cylinder |
| Mathematics | 3 | Geometry | 2 | Draw a shape that is congruent to another two-dimensional shape |
| Mathematics | 3 | Geometry | 3 | Identify, describe and draw points, lines and line segments and use these terms when describing two-dimensional shapes |
| Mathematics | 3 | Geometry | 4 | Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories |
| Mathematics | 3 | Geometry | 5 | Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole (1/2, 1/3, 1/4, 1/6, 1/8) |
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| Mathematics | 3 | Measurement | 1 | Esimate and measure capacity using quarts, gallons, and liters |
| Mathematics | 3 | Measurement | 2 | Estimate and measure weight using pounds and kilograms |
| Mathematics | 3 | Measurement | 3 | Find the value of any collection of coins and bills. Write amounts less than a dollar using the ¢ symbol and write larger amounts in decimal notation using the $ symbol |
| Mathematics | 3 | Measurement | 4 | Use play or real money to decide whether there is enough money to make a purchase |
| Mathematics | 3 | Measurement | 5 | Choose and use appropriate units and tools to estimate and measure length and weight. Estimate and measure length to a quarter-inch, weight in pounds and kilograms, and read temperature in Celsius and Fahrenheit. Select appropriate units for the given situation. Use the relationship between the units to express answers in different units |
| Mathematics | 3 | Measurement | 6 | Tell and write time using an analog and digital clock to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
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| Mathematics | 3 | Measurement | 7 | Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem |
| Mathematics | 3 | Measurement | 8 | Find the area of a plane figure by covering it with unit squares |
| Mathematics | 3 | Measurement | 9 | Relate area to the operations of multiplication and addition |
| Mathematics | 3 | Measurement | 10 | Find the area of a rectangle with whole-number side lengths by tiling it with unit squares, and show that the area is the same as would be found by multiplying the side lengths |
| Mathematics | 3 | Measurement | 11 | Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning |
| Mathematics | 3 | Measurement | 12 | Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning |
| Mathematics | 3 | Measurement | 13 | Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems |
| Mathematics | 3 | Measurement | 14 | Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters |
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| Mathematics | 3 | Data Analysis and Probability | 1 | Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs |
| Mathematics | 3 | Data Analysis and Probability | 2 | Generate measurement data by measuring lengths using rulers marked with halves of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters |
| Mathematics | 3 | Data Analysis and Probability | 3 | Collect data using observations, surveys, and experiments |
| Mathematics | 3 | Data Analysis and Probability | 4 | Represent data using tables and graphs such as line plots, bar graphs, and line graphs |
| Mathematics | 3 | Data Analysis and Probability | 5 | Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions |
| Mathematics | 3 | Data Analysis and Probability | 6 | Describe events as likely or unlikely and discuss the degree of likelihood using such words as certain, equally likely, and impossible |
| Mathematics | 3 | Data Analysis and Probability | 7 | Interpret data displayed in a circle graph and answer questions about the situation |
| Mathematics | 3 | Data Analysis and Probability | 8 | Identify whether everyday events are certain, likely, unlikely, or impossible |
| Mathematics | 3 | Data Analysis and Probability | 9 | Record the possible outcomes for a simple probability experiment |

**MATHEMATICS: FOURTH GRADE**

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 4 | Number Sense | 1 | Rename and rewrite whole numbers as fractions |
| Mathematics | 4 | Number Sense | 2 | Name and write mixed numbers, using objects or pictures |
| Mathematics | 4 | Number Sense | 3 | Name and write mixed numbers as improper fractions, using objects or pictures |
| Mathematics | 4 | Number Sense | 4 | Write tenths and hundredths in decimal and fraction notations. Know the fraction and decimal equivalents for halves and fourths (e.g., 1/2 = 0.5 = 0.50, 7/4 = 1 3/4 = 1.75) |
| Mathematics | 4 | Number Sense | 5 | Find equivalent fractions and then use them to compare and order whole numbers and fractions using the symbols for less than (<), equals (=) and greater than (>) |
| Mathematics | 4 | Number Sense | 6 | Solve problems involving decimals to hundredths |
| Mathematics | 4 | Number Sense | 7 | Use words, models, standard form and expanded form to represent place value of decimal numbers to hundredths |
| Mathematics | 4 | Number Sense | 8 | Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right |
| Mathematics | 4 | Number Sense | 9 | Read and write multi-digit whole numbers up to 1,000,000 using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons |
| Mathematics | 4 | Number Sense | 10 | Use place value understanding to round multi-digit whole numbers and to any place and two-place decimals to tenths or to the nearest whole number |
| Mathematics | 4 | Number Sense | 11 | Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model |
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| Mathematics | 4 | Computations-Operation | 1 | Understand the special properties of 0 and 1 in multiplication and division |
| Mathematics | 4 | Computations-Operation | 2 | Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models |
| Mathematics | 4 | Computations-Operation | 3 | Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models |
| Mathematics | 4 | Computations-Operation | 4 | Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions |
| Mathematics | 4 | Computations-Operation | 5 | Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model |
| Mathematics | 4 | Computations-Operation | 6 | Understand addition and subtraction of fractions as joining and separating parts referring to the same whole |
| Mathematics | 4 | Computations-Operation | 7 | Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model |
| Mathematics | 4 | Computations-Operation | 8 | Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem |
| Mathematics | 4 | Computations-Operation | 9 | Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100 |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| | | | | |
| Mathematics | 4 | Algebra | 1 | Understand that an equation such as y = 3x + 5 is a rule for finding a second number when a first number is given |
| Mathematics | 4 | Algebra | 2 | Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve problems |
| Mathematics | 4 | Algebra | 3 | Write and solve equations involving multiplication and division including word problems |
| Mathematics | 4 | Algebra | 4 | Show that the order in which two numbers are multiplied (commutative property) and how numbers are grouped in multiplication (associative property) will not change the product. Use these properties to show that numbers can by multiplied in any order |
| Mathematics | 4 | Algebra | 5 | Use the distributive property in expressions involving multiplication |
| Mathematics | 4 | Algebra | 6 | Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations |
| Mathematics | 4 | Algebra | 7 | Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison |
| Mathematics | 4 | Algebra | 8 | Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite |
| Mathematics | 4 | Algebra | 9 | Generate a number or shape pattern that follows a given rule using the four operations. Identify apparent features of the pattern that were not explicit in the rule itself |
| Mathematics | 4 | Algebra | 10 | Model problem situations with objects and use representations such as words, tables, and equations to draw conclusions |
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| Mathematics | 4 | Geometry | 1 | Identify, describe, and draw parallelograms, rhombuses, and trapezoids, using appropriate mathematical tools and technology |
| Mathematics | 4 | Geometry | 2 | Identify congruent quadrilaterals and give reasons for congruence using sides, angles, parallels, and perpendiculars |
| Mathematics | 4 | Geometry | 3 | Identify shapes that have reflectional and rotational symmetry |
| Mathematics | 4 | Geometry | 4 | Measure and draw line segments to the nearest eighth-inch and millimeter |
| Mathematics | 4 | Geometry | 5 | Identify, describe and draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools and technology. Identify these in two-dimensional figures |
| Mathematics | 4 | Geometry | 6 | Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles |
| Mathematics | 4 | Geometry | 7 | Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry |
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| Mathematics | 4 | Measurement | 1 | Measure length to the nearest quarter-inch, eight-inch, and millimeter |
| Mathematics | 4 | Measurement | 2 | Explore volume and capacity as different ways of measuring the space inside a shape |
| Mathematics | 4 | Measurement | 3 | Represent data on a number line and in tables, including frequency tables |
| Mathematics | 4 | Measurement | 4 | Interpret data graphs to answer questions about a situation |
| Mathematics | 4 | Measurement | 5 | Summarize and display the results of probability experiments in a clear and organized way |
| Mathematics | 4 | Measurement | 6 | Develop and use formulas for finding the perimeter and area of rectangles (including squares) by using appropriate strategies (i.e., decomposing shapes), tools and units of measure |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 4 | Measurement | 7 | Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table |
| Mathematics | 4 | Measurement | 8 | Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale |
| Mathematics | 4 | Measurement | 9 | Apply the area and perimeter formulas for rectangles in real world and mathematical problems |
| Mathematics | 4 | Measurement | 10 | Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: |
| Mathematics | 4 | Measurement | 11 | An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a “one-degree angle,” and can be used to measure angles |
| Mathematics | 4 | Measurement | 12 | An angle that turns through n one-degree angles is said to have an angle measure of n degrees |
| Mathematics | 4 | Measurement | 13 | Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure |
| Mathematics | 4 | Measurement | 14 | Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure |
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| Mathematics | 4 | Data Analysis and Probability | 1 | Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) Solve problems involving addition and subtraction of fractions by using information presented in line plots |
| Mathematics | 4 | Data Analysis and Probability | 2 | Design investigations to address a question and consider how data-collection methods affect the nature of the data set |
| Mathematics | 4 | Data Analysis and Probability | 3 | Collect data using observations, surveys, and experiments |
| Mathematics | 4 | Data Analysis and Probability | 4 | Represent data using tables and graphs such as line plots, bar graphs, and line graphs |
| Mathematics | 4 | Data Analysis and Probability | 5 | Recognize the differences in representing categorical and numerical data |
| Mathematics | 4 | Data Analysis and Probability | 6 | Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions |

**MATHEMATICS: FIFTH GRADE**

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 5 | Number Sense | 1 | Understand and interpret percents as a part of a hundred. |
| Mathematics | 5 | Number Sense | 2 | Explain different interpretations of fractions: as parts of a whole, parts of a set, and division of whole numbers by whole numbers |
| Mathematics | 5 | Number Sense | 3 | Identify on a number line the relative position of simple positive fractions, positive mixed numbers, and positive decimals |
| Mathematics | 5 | Number Sense | 4 | Compare and order fractions and decimals to thousandths by using the symbols for less than (<), equal to (=) and greater than (>) |
| Mathematics | 5 | Number Sense | 5 | Identify and explain prime and composite numbers |
| Mathematics | 5 | Number Sense | 6 | Use words, models, standard form and expanded form to represent place value of decimal numbers to thousandths |
| Mathematics | 5 | Number Sense | 7 | Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left |
| Mathematics | 5 | Number Sense | 8 | Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10 |
| Mathematics | 5 | Number Sense | 9 | Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons |
| Mathematics | 5 | Number Sense | 10 | Use place value understanding to round decimals to any place |
| | | | | |
| Mathematics | 5 | Computations-Operation | 1 | Solve problems involving multiplication and division of whole numbers fluently using a standard algorithmic approach with understanding and explain how to treat the remainders in division |
| Mathematics | 5 | Computations-Operation | 2 | Construct and analyze line graphs and double-bar graphs from data, including data collected through observations, surveys and experiments |
| Mathematics | 5 | Computations-Operation | 3 | Perform simple experiments to gather data from a large number of trials and use data from experiments to predict the chance of future outcomes |
| Mathematics | 5 | Computations-Operation | 4 | Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols |
| Mathematics | 5 | Computations-Operation | 5 | Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them |
| Mathematics | 5 | Computations-Operation | 6 | Fluently multiply double-digit whole numbers using the standard algorithm with understanding |
| Mathematics | 5 | Computations-Operation | 7 | Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models |
| Mathematics | 5 | Computations-Operation | 8 | Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used |
| Mathematics | 5 | Computations-Operation | 9 | Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators |
| Mathematics | 5 | Computations-Operation | 10 | Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers |
| Mathematics | 5 | Computations-Operation | 11 | Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 5 | Computations-Operation | 12 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction |
| Mathematics | 5 | Computations-Operation | 13 | Interpret the product (a/b) × q as a parts of a partition of qinto b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b |
| Mathematics | 5 | Computations-Operation | 14 | Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas |
| Mathematics | 5 | Computations-Operation | 15 | Interpret multiplication as scaling (resizing), by: |
| Mathematics | 5 | Computations-Operation | 16 | Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication |
| Mathematics | 5 | Computations-Operation | 17 | Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n × a)/(n × b) to the effect of multiplyinga/b by 1 |
| Mathematics | 5 | Computations-Operation | 18 | Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem |
| Mathematics | 5 | Computations-Operation | 19 | Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions |
| Mathematics | 5 | Computations-Operation | 20 | Interpret division of a unit fraction by a non-zero whole number, and compute such quotients |
| Mathematics | 5 | Computations-Operation | 21 | Interpret division of a whole number by a unit fraction, and compute such quotients |
| Mathematics | 5 | Computations-Operation | 22 | Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem |
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| Mathematics | 5 | Algebra | 1 | Write simple algebraic expressions in one or two variables and evaluate them by substitution |
| Mathematics | 5 | Algebra | 2 | Understand that the length of a horizontal line segment on a coordinate plane equals the difference between the x-coordinates and that the length of a vertical line segment on a coordinate plane equals the difference between the y-coordinates |
| Mathematics | 5 | Algebra | 3 | Use information taken from a graph or equation to answer questions about a problem situation |
| Mathematics | 5 | Algebra | 4 | Use two-dimensional coordinate grids to represent points in the first quadrant that fit linear equations and then draw the line determined by the points |
| Mathematics | 5 | Algebra | 5 | Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane |
| Mathematics | 5 | Algebra | 6 | Identify such properties as commutativity, associativity, and distributivity and use them to compute with whole numbers |
| Mathematics | 5 | Algebra | 7 | Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions |
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| Mathematics | 5 | Geometry | 1 | Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, triangles, and circles by using appropriate tools (e.g., ruler, compass, protractor, appropriate technology, media tools) |
| Mathematics | 5 | Geometry | 2 | Identify congruent triangles and justify your decisions by referring to sides and angles |
| Mathematics | 5 | Geometry | 3 | Identify and draw the radius and diameter of a circle and understand the relationship between the radius and diameter |
| Mathematics | 5 | Geometry | 4 | Understand that 90°, 180°, 270°, and 360° are associated with quarter, half, three-quarters, and full turns, respectively |
| Mathematics | 5 | Geometry | 5 | Identify, classify and draw polygons, such as pentagons and hexagons and triangles (i.e., equilateral, isosceles, scalene, right, acute and obtuse triangles) |

| Content Area | Grade Level/Span | Strand | Number | Content Area Topic |
|---|---|---|---|---|
| Mathematics | 5 | Geometry | 6 | Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate) |
| Mathematics | 5 | Geometry | 7 | Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation |
| Mathematics | 5 | Geometry | 8 | Classify two-dimensional figures in a hierarchy based on properties. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles |
| Mathematics | 5 | Geometry | 9 | Use geometric models to solve problems in other areas of mathematics, such as number and measurement |
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| Mathematics | 5 | Measurement | 1 | Add and subtract with money in decimal notation |
| Mathematics | 5 | Measurement | 2 | Explain which types of displays are appropriate for various sets of data |
| Mathematics | 5 | Measurement | 3 | Find the mean, median, mode, and range of a set of data and describe what each does and does not tell about the data set |
| Mathematics | 5 | Measurement | 4 | Understand that probability can take any value between 0 and 1, events that are not going to occur have probability 0, events certain to occur have probability 1, and more likely events have a higher probability than less likely events |
| Mathematics | 5 | Measurement | 5 | Express outcomes of experimental probability situations verbally and numerically |
| Mathematics | 5 | Measurement | 6 | Develop and use the formulas for the perimeter and area of triangles, parallelograms and trapezoids using appropriate units for measures. |
| Mathematics | 5 | Measurement | 7 | Develop and use the formula for the volume of rectangular prisms using appropriate units for measures |
| Mathematics | 5 | Measurement | 8 | Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems |
| Mathematics | 5 | Measurement | 9 | Recognize volume as an attribute of a solid figure and compare volumes of right rectangular prisms by filling them with unit cubes and estimating and counting the number of unit cubes |
| Mathematics | 5 | Measurement | 10 | Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication |
| Mathematics | 5 | Measurement | 11 | Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems |
| Mathematics | 5 | Measurement | 12 | Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems |
| | | | | |
| Mathematics | 5 | Data Analysis and Probability | 1 | Use measures of center, focusing on the median, and understand what each does and does not indicate about the data set |
| Mathematics | 5 | Data Analysis and Probability | 2 | Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions |

**K-5 MATHEMATICS PROCESS STANDARDS**

| Content Area | Grade Level/Span | Strand | Content Area Topic |
|---|---|---|---|
| Mathematics | K-5 | Process-Practice | Make sense of problems and persevere in solving them. |
| Mathematics | K-5 | Process-Practice | Reason abstractly and quantitatively. |
| Mathematics | K-5 | Process-Practice | Construct viable arguments and critique the reasoning of others. |
| Mathematics | K-5 | Process-Practice | Model with mathematics. |
| Mathematics | K-5 | Process-Practice | Use appropriate tools strategically. |
| Mathematics | K-5 | Process-Practice | Attend to precision. |
| Mathematics | K-5 | Process-Practice | Look for and make use of structure. |
| Mathematics | K-5 | Process-Practice | Look for and express regularity in repeated reasoning. |
| Mathematics | K-5 | Process-Practice | Use technology strategically. |